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## THE ASSAM-BURMA FRONTIER

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*Read at the Meeting of the Society, 11 January 1926.*

I GREATLY appreciate the honour which the Royal Geographical Society has done me in asking me to lecture on the Assam-Burma frontier. Would that my qualifications were greater! All the knowledge I can boast is that picked up during some years of very busy service in that corner of our Indian Empire. In describing the country which I know I shall not confine myself to its physical features, but shall say something of the little-known tribes inhabiting it. In doing so I feel I have ancient and excellent authority behind me, for the early geographers never failed, when writing of strange mountains and deserts, to say something of the even stranger races to be found there. Indeed, it is in these very hills of Eastern India that some of these queer folk are placed. One night in 1922, sitting by a camp fire, I was told by a Naga of a tradition of a tribe whose ears were so long that when they went to bed one served as a mattress and the other as a blanket. Dr. Hutton has pointed out to me that Pliny had not only heard and recorded this story nearly sixteen hundred years before I did, but that he also places *in quadam convalle Imdi* (e.g. Himalaya) *montis*, a tribe of cannibals which he calls *Abarimon*, which is simply the Assamese words *abiri manuh* ("independent men"), a term commonly used to this day for any wild hill tribe. This proves the interesting fact that Pliny must have used an Assamese source, and makes one realize how far stories travelled in ancient times, and how long-lived they are, even when false. The inhabitants of these hills are of particular importance, as their methods of agriculture seem to be causing no small alteration in the geographical features of the country.

A glance at the map will show what a curious position Assam occupies, tucked away in the far north-east corner of India proper. It is itself a great alluvial plain, only 300 feet above sea-level, though it is 600 miles from the mouth of the Brahmaputra, which waters it. It is united in the south with the alluvial plain of Bengal. Its inhabitants are closely allied to those of Bengal. But almost surrounding it are great mountain ranges inhabited by people of Mongolian stock. To the north and east of it are the Himalayas, rising almost sheer up to enormous heights, and to the south-east a long range of mountains stretches for 500 miles

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down towards the Bay of Bengal, continuing as a raised line under the sea till it reappears as the Andamans and Nicobars, and passes through Sumatra and Java and beyond, forming one of the longest ranges on the Earth's surface. For much of its length this range forms the boundary between Assam and Burma. Very little has been written on this frontier, and most of what has been recorded is hidden away in obscure journals. About 1825 a pretender to the throne of Assam prevailed upon the King of Burma to send an army to assist him. It marched through the Naga hills, it is uncertain by what route, committing horrible atrocities on the way, and spread terror and destruction throughout Assam. We sent troops which turned the Burmese out, and ourselves took over Assam. Then followed a series of reports, mostly based on hearsay, on routes through the hills. But this temporary interest died down when the annexation of Upper Burma put an end to all further fear of an invasion from that side. It is one of the most curious frontiers in the world, and a great natural boundary. On the west lies the valley of Assam, and on the east the valleys of Chindwin and Irrawady. Yet, though it lies between two fertile, populous provinces, with their railways, roads, and steamer services, it is as yet largely unexplored and contains some of the most primitive tribes to be found within our Indian Empire. In the northern portion it has been crossed only in a few places. Sadiya, in the north-east of Assam, has been reached from Burma more than once, but with great difficulty. There is a way through the Hukong valley which has been surveyed with a view to building a railway at some future date. The route from Burma would be up the Hukong, over a divide at about 3000 feet, I think, and down the Dihing to Margherita, where the line would link up with the Assam-Bengal Railway. At present, if a traveller wishes to go from Dibrugash, say, to Myitkina, in Upper Burma, about 200 miles away as the crow flies, he has to go by train to Calcutta, where he takes a boat to Rangoon, from which he begins another enormous railway journey. South of the Hukong valley no white man has been through till we get down to the level of Kohima, the headquarters of the Naga Hills district. Up to Kohima there is a metalled road from the plains of Assam. From there there is a bridle path which reaches almost to the Burmese boundary, some way south of Saramatti. It is possible to get through from there, and every two or three years the Deputy Commissioner of the Naga Hills, and the Deputy Commissioner of the Upper Chindwin meet and discuss various local matters which require settlement. From Kohima too it is quite easy to get through Manipur State to the Chindwin valley. Further south there are several ways through.

It will thus be seen that the least penetrated, and so the least known, portion of the frontier is that between the Hukong valley and the southern end of the Naga Hills district. It is here that I served, and it is with this little-known country that I have to deal. The Naga Hills district

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is a long strip of hill country bordering the plains of Upper Assam. It was taken over in order to protect the plains from raids by head-hunters. To the east of this strip is a block of independent territory inhabited by wild tribes, between the Assam and the Burma administrative boundaries. It is this which forms the barrier.

Of course a column *could* get through anywhere, but tribes with whom we have never been in touch would probably oppose us, more through ignorance and panic than for any other reason, and to use modern rifles against bows and spears would mean not only loss of life, but the loss of all hope of establishing friendly relations for years to come. This has never been our way. Instead, we sit in the administered area, a Deputy Commissioner at Kohima and a Subdivisional officer at Mokochung (some 86 miles away) with a battalion of Gurkhas for use if need be, and slowly work to gain the confidence of the tribes on our frontier. Save when we have had to deal with the resistance of some village which we had set out to punish for raiding or some such offence, no column with which I have been has had to fire a shot, even when approaching some village to which no white man had ever been before.

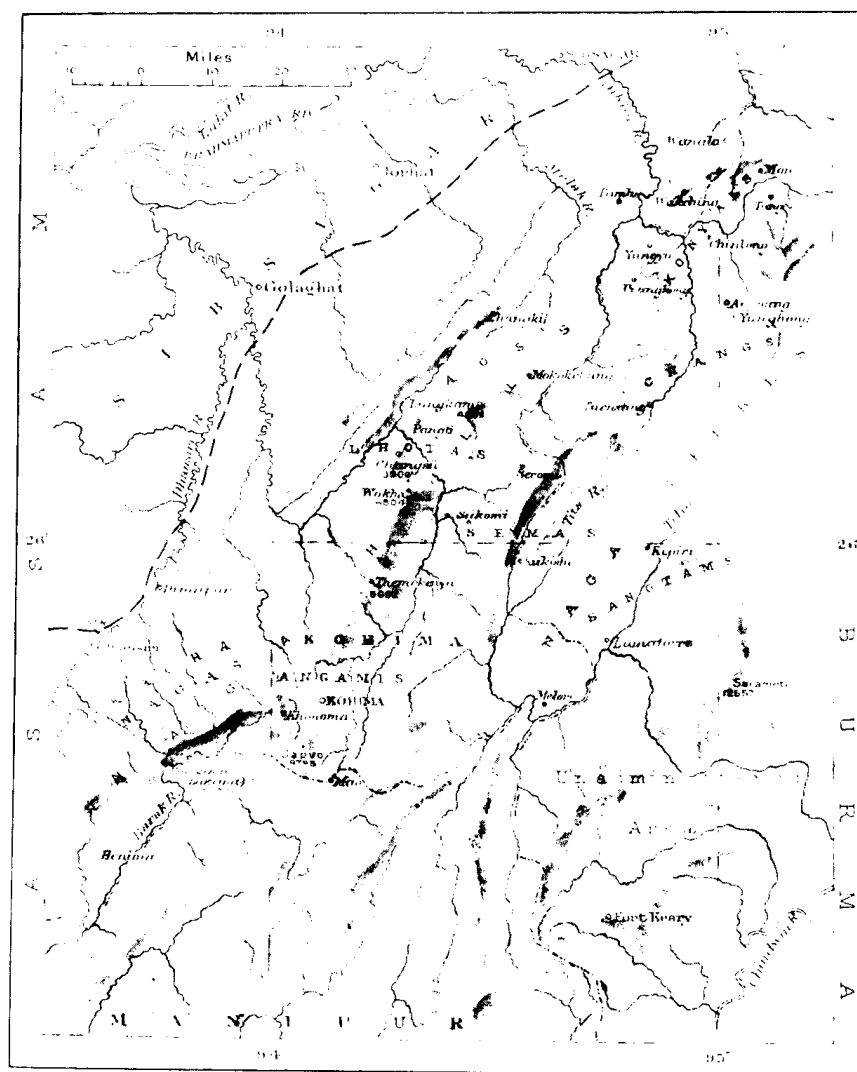
Why are these hills so hard to penetrate? There are several reasons. The climate is bad for much of the year. The rainfall is one of the heaviest in the world, and mosquitoes, leeches, sandflies, and other pests abound. The Anopheles mosquito is plentiful, and many of them are infected. I do not think there was a single European official in the Naga Hills last year who did not have malaria. Transport is another difficulty. There are no bridle paths save in the administered area. Beyond that there are only Naga paths, very steep and so narrow that a column has to march in single file. All baggage has to be carried by men, who require a baggage guard in hostile country. Then there is language. Often one village cannot understand the language of the next, and this leads to interpreting through several mouths, with all its inconvenience and danger of serious misunderstanding. But the greatest obstacle to exploration is the warlike nature of the tribes. They are intensely suspicious of strangers. Yet one cannot avoid them, for the only paths are those which lead from village to village. One is therefore compelled to visit, and generally to pass through, the villages. Inside a village the path often becomes a narrow street between houses set so closely together that one is continually brushing past front posts and ducking under eaves. A column would be helpless to defend itself in such a situation. Even between villages the jungle is so thick that ambush, the usual Naga method of warfare, is always possible, and where there is any likelihood of attack a column can only move at a snail's pace with flankers hacking their way through on either hand. The very nature of the country, too, makes travelling difficult. Along the base of the hills runs a broad strip of heavy forest; then come heavily wooded and excessively unhealthy foothills. Further in, the mountains are often very steep

and run up to over 12,000 feet. All ranges lie directly across one's path as one goes towards Burma, and have to be crossed one by one, for there are no tracks along the valleys. The rivers are swift, and are crossed only by a few precarious cane bridges. Usually one has to ford, and as they rise quickly one may easily be cut off.

But it is the Naga tribes who constitute both the chief interest of the area and the chief hindrance to exploration. Though their home is included in India, they are not Indians at all in the ordinary sense of the word.

We will begin our journey at the southern end of the district and pursue a tortuous course to the northern end. The first tribe we encounter are the Kacha Nagas. Like all Naga villages theirs were very strongly defended in the old days, and though this area has long been taken over the old defences still exist. Many of the villages are surrounded by a deep, impenetrable thicket of living cane, often reinforced by a deep ditch, which formerly bristled with "panjis"—sharp bamboo spikes which will go clean through a man's foot. The entrance is through a tunnel under the cane, which is held up by stakes, and across a single plank over the ditch. In the event of attack the stakes would be removed, allowing the cane to drop and block the tunnel, and the plank taken away. Such methods of defence are still in everyday use in villages in the unadministered area. What strikes a traveller in their country chiefly is their love of dancing. Their dances are pretty, and they are always ready to oblige with a performance. For a dance a man wears his ordinary dress of a black kilt ornamented with lines of cowries, and a white cotton belt, but for the occasion he whitens his legs up to the knee with lime and wears very artistic feather ear-ornaments. Girls, on the other hand, wear special skirts of dark blue, red, and white, and stomachers of dark blue ornamented with cowries and whorls of white dog's hair dyed red. The effect is most picturesque. But they are a backboneless people, and have long been under the dominance of the vigorous Angami, whom we come to next. It was his raids on the plains which first led us to take over the Naga Hills, and it was he who gave us most trouble when we had done so. In 1879 Khonoma villagers killed the Deputy Commissioner as he was approaching their village and took his head and those of most of his escort. They then rose and, joined by part of Kohima village, besieged Kohima fort with such vigour that they were within an ace of taking it. It was only after hard fighting that Khonoma was finally crushed, and it was there that Colonel Ridgeway won the Victoria Cross in 1880. The Angami in full dress is a wonderful sight. He wears a huge fan-shaped headdress of hornbill feathers, and highly coloured crossed baldricks over his chest. Like the Kacha Naga, he wears a kilt. The women are more plainly dressed. A girl keeps her head shaved till she is engaged, when she allows her hair to grow. Huge brass earrings are worn in some villages. The most remarkable thing

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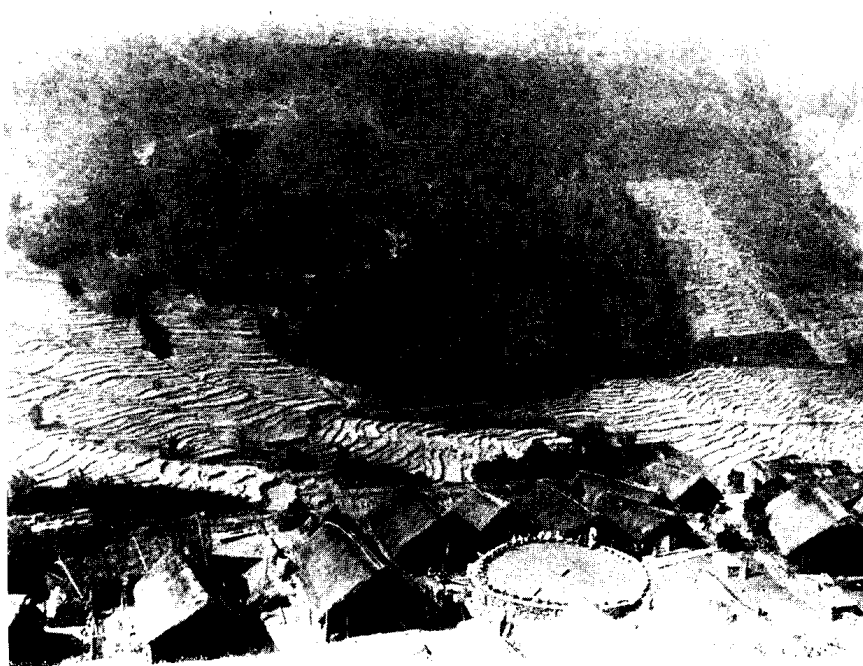
Provincial Boundary  
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#### SKETCH-MAP OF NAGA COUNTRY

Note: This map is taken from the most recent materials available. The copies of the latest surveys have not reached England.



TIZU VALLEY FROM BAIMHO, SEMA NAGA



KHONOMA, ANGAMI NAGA

about his country is the way he has terraced the steep hillsides for irrigated rice cultivation. These terraces are marvellous works when one remembers that they are made without any surveying instruments whatever. Water is led in channels from streams, often for miles round the shoulder of a hill. It will irrigate a terrace perhaps half a mile long, be allowed to run down to the next terrace, and irrigate that, with a very gentle flow back to a point only 6 or 8 feet below where it originally left the artificial channel. Terraces of this kind are found in the Philippines, in Borneo, and in many parts of Eastern Asia, and the fact that they are found in the Naga Hills opens an interesting problem of migration. I shall have to mention later the way in which Naga tribes who do not practise terraced cultivation seem to be altering the face of their country, and the possible effects of this. The Angamis, by adopting this method of making terraces, seem to have stabilized things. The same terraces are used year after year, and there is very little loss of soil; they carefully conserve their forests too, so that the water supply, on which the success of their terraced cultivation depends, may remain constant. But the face of the country *is* changing all the same, though very slowly. The rock is a very unstable shale which will bear no weight. The result is that terraces sometimes go sliding downhill, and this winter some of Kohima station has gone.

From the Angamis we come to the Semas, a cheerful and very warlike tribe, most of whose territory lies on the Chindwin side of the watershed: for it is to be noted that the watershed between Assam and Burma has not been adopted as the boundary. Some of the tribe is administered, and some is independent. The Angami is a democrat, and every man does that which is right in his own eyes, but the Semas have very autocratic chiefs, each in his own village ruling his subjects with a rod of iron, and on the whole very justly. Probably no race in the world can boast a dress more picturesque and striking than that of a Naga warrior. Among the Semas, Lhotas, and Aos it is as follows. On the head is worn a deep fillet of bear's hair on a cane frame, which is decorated with the black-barred tail feathers of the Great Indian hornbill. One or sometimes two embroidered baldricks with deep fringes of scarlet goat's hair cross the chest and support behind a tail of human hair and scarlet goat's hair. This tail is really a glorified "panji" carrier. In front the warrior wears an apron of black cloth entirely covered with close lines of cowries, and on his wrists are cowrie gauntlets with scarlet fringes. Above the elbow he wears heavy ivory armlets. His weapons are a long spear with a shaft entirely covered with scarlet hair ending in a deep fringe, and a "dao" with a tuft of scarlet hair on the handle. Sema women as a rule leave the upper half of the body uncovered. Girls engaged to be married wear fillets of plaited scarlet cane and yellow orchid stalk. Peace has few charms for this vigorous people, and chiefs on the administered side of the Tizu envy their brothers across the

frontier who can still add spice to life by an occasional raid. A remarkable feature about the tribe is the way in which they increased about two generations ago, many of the chiefs having families of between twenty and thirty. The result was overcrowding and shortage of land. They expanded at the expense of their less warlike neighbours, but were eventually held on all sides, and the overcrowding still exists.

Their method of cultivating rice, job's tears, and millet is that known as "jhuming." The jungle is felled and allowed to dry. It is then burnt and the ashes dug into the soil, and the crop sown. The same area is used two years in succession, and is then abandoned until enough jungle has grown up for it to be used again—usually from five to ten years. Of course, the thicker the population the shorter the period of rotation before the same land has to be used again, and the less chance the jungle has of growing up. The less the jungle grows up the more the soil is denuded, and the less soil there is the less jungle there will be in future; and so on in a vicious circle. A secondary effect is that the less roots there are in the soil the less is rain held up, and the more quickly do torrents come down in flood.

The denudation is terrible. Once from a hilltop after some heavy rain I could count no fewer than thirty-six new landslips on the opposite side of the valley over which I was looking. Scores of tribes in Assam and Burma practise "jhuming," and what is going on in the Sema country is only an example of what is happening over a huge area. Vast quantities of soil are carried down the rivers, which deposit the silt as they slacken speed in the plains. One result has been the gradual growth of huge sandbanks at such places as the junction of the Brahmaputra and Ganges near Goalundo. These in turn hold back the water and cause floods, which do an immense amount of damage to crops in the plains. I do not mean to imply that sandbanks would not be caused in any case. But the amount of silt brought down by rivers flowing through virgin jungle is very different from that carried by streams fed from steep hillsides covered with freshly dug soil on which rain has been pouring at the rate of half an inch an hour or more.

Altogether, the problem is a difficult one. To forbid "jhuming" is impossible: it would condemn thousands of people to starvation. Moreover, "jhuming" by tribes who are not compelled by pressure of population to use the same land too often, and who leave a reasonable number of trees standing on the land, probably does no harm at all. It is in the crowded areas such as the Sema country that the harm is done. There we are trying two remedies with some success. We have been sowing quick-growing trees, such as Nepal alder and acacia, which will hold the soil, and we have been teaching Semas to terrace like the Angamis.

This "jhum" cultivation is one of the most primitive and probably one of the earliest methods of those employed by man, and must, it seems, have preceded irrigation. One wonders whether it was not one of the

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causes of desiccation of large areas of the globe. Possibly hillsides which are now bare rock were once covered with forest. As this was "jhumed" denudation would set in, and the destruction of forests would cause a diminution of rainfall, and so eventually desiccation. It is interesting to think that in watching a hillman of Assam "jhuming" his land we may be watching an agricultural process which has had an incalculable effect on geography and human history.

East of the Semas one gets into little-known country, a striking feature of which is the fine pine forests which clothe many of the hillsides. In spring the pines and the young grass and the scarlet rhododendrons make a picture one can never forget. In 1924 I went as far as Kipirr, which had never hitherto been visited. We had an excellent reception, and I even had a friendly visit from some people from the east bank of the Ti-ho. The Saramatti range, which is covered with pine forests almost to the summit, was in full view only just across the valley, and I was able to see down the valley through which the Ti-ho runs as it makes a sudden turn towards Burma. It was quite clear that the land falls away quickly on that side towards the Chindwin. To the north I was able to obtain an excellent view of a portion of the little-known Yinitsung country. It is thickly populated, and nearly every commanding ridge was crowned with a powerful village. We have been little in touch with this tribe and know little of them. For one thing, they prefer to be left to themselves, and for another, embassies from them can only reach administered territory after a precarious journey through the Sema or Chang country. The Southern Sangtams, who inhabit the country round Kipirr, expose the heads of their enemies on poles. It is not mere lust of slaughter that impels a Naga to take heads. He certainly rejoices when he can bring home tangible proof that he has killed his enemy, but he also believes that by bringing home the head of an enemy he also brings home his soul, and so adds to the supply of "soul-force" in his village, thus increasing its fertility and prosperity. It is for this reason that the head of an enemy is placated with small offerings and it is urged to call its relations and friends so that they too may be killed. Head hunting still goes on in the unadministered area, but by definitely expressing disapproval of it Government is gradually causing it to cease, without taking over and directly administering the area. All villages being continually on their guard, the number of casualties due to head hunting is very small indeed.

Coming back through the Semas we strike the Lhotas, a tribe which centres round Wokha Hill, a fine isolated peak of over 6500 feet, which is a landmark for miles around. Under it the Semas, Lhotas, and Aos believe the Land of the Dead to lie, and on the east face of it is a conspicuous line of white rock, which they regard as the Road of the Dead. North-east of the Lhotas lie the Aos, a large and important tribe, living in huge villages on the tops of the ranges which run through their country.

They are an interesting people, and among their curious customs is that of exposing their dead on platforms instead of burying them. These platforms are arranged in rows flanking the paths up to the villages, which are thereby rendered very unpleasant to approach at times. The workaday dress of the men both among the Lhotas and Aos consists of a strip of cloth pulled up between the legs from behind and tucked through the belt so that it forms a flap in front. Over the shoulders they wear a cotton cloth. There is an enormous variety of these, varying in pattern with the status of the wearer and the number of Feasts of Merit he has given. Similarly the skirts of Ao women vary in pattern according to their status and clan. Woe betide a lady who sports a skirt of a pattern to which she is not entitled! All well-to-do women wear magnificent strings of cornelian beads, even when working in the fields. The Aos leave large numbers of trees standing on the "jhumed" hillsides, and this method of cultivation as practised by them does not seem to cause any abnormal denudation of the soil.

The peculiar characteristics of the country are particularly well shown in the portion inhabited by the Aos and Lhotas. You have a series of very long, straight ranges, running parallel with each other and with the Brahmaputra. The streams therefore have to run for many miles at right angles to the course they must finally take to reach the Brahmaputra, and eventually only escape through gorges cut through the ranges. The impression one gets is that the streams have great difficulty in getting out of the hills at all.

Another characteristic is the levelness of some of the valleys. Some of the valleys have no heads, if one may put it that way. Instead you will find a stream flowing out at either end, the watershed dividing the two sources being so low as to be hardly perceptible to the casual observer. These valleys are a great snare to the unwary geographer who tries to make maps from the tops of the ranges without going down to the valleys to see which way the streams really run.

I will not deal with the Changs, who lie to the east of the Aos, as I was laid up with leech-bites and unable to accompany Dr. Hutton when he toured in the country in 1923, visiting many villages to which no white man had ever been. North of the Aos are the Konyaks. This term covers what is really a number of different tribes, but they extend an unknown distance to the east, and we do not yet know enough about them to be able to subdivide them properly. Only a small number of their villages lie in administered territory. The tribe which is giving the Burma Government so much trouble with its human sacrifices belongs to this section of the Naga race. The Konyaks differ markedly from all the Naga tribes I have hitherto described in this paper. The staple diet in most places is taro instead of rice; their costume is distinctive in its scantiness; their artistic sense is very high; and, while all other Naga clans are strictly exogamous, they possess an endogamous



RAIDERS RETURNING TO SAKHALU, SEMA NAGA



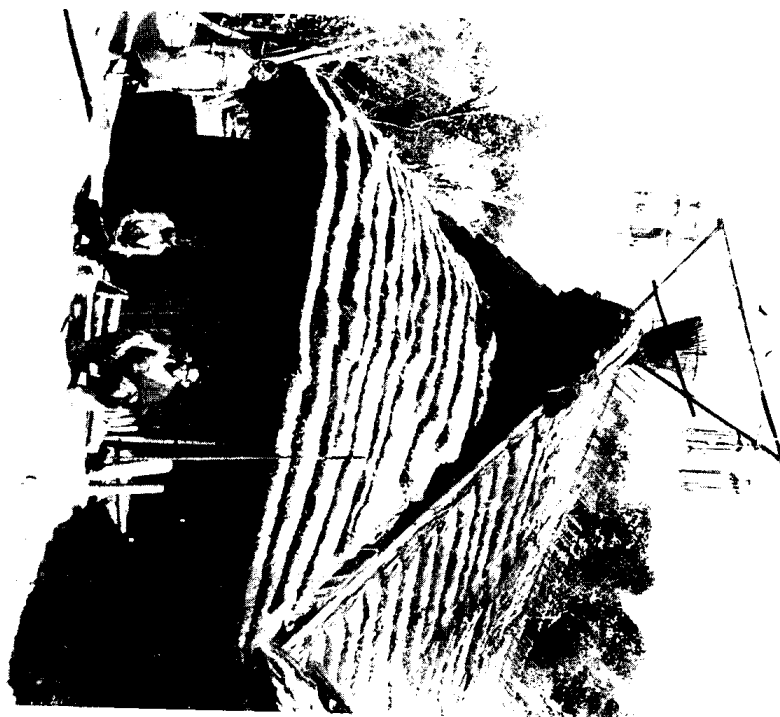
COLUMN CROSSING "JHUMI" LAND, TANGSA, KONYAK NAGA



CHINLONG, KONYAK NAGA



MUNGCHEN VILLAGE, AO NAGA



WEALTHY COUPLE AND HOUSE, KICHILIMI NAGA

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clan called Angs from which their sacred chiefs are drawn. In the southern and western portion of their country the men constrict their waists to an amazing smallness with cane or bark belts. In some places this is the sole garment worn, while in other places it is supplemented by an apron. Women in some places wear a skirt reaching halfway to the knee, while in others they wear only a very narrow strip of cloth encircling them low down below the buttocks. Both men and women are elaborately tattooed. Further to the east the men wear crested hats of cane and yellow orchid skin, and very handsome belts covered with cowries ground square and sewn close together. The women have their heads clipped in a peculiar way, save those of servile clans, who have them cropped quite short all over, lest a hair should fall into their master's food while they are cooking. The Konyaks are exceedingly warlike, and possess a highly developed social system. The villages are ruled by sacred chiefs, and a striking feature is the huge "Morungs," which the men of the villages use as their club houses. It is in them that the warriors assemble before and after a raid. They are of great size, and remind one strongly of the *ravi* of New Guinea. The posts are covered with elaborate carvings in high relief of human beings, heads, tigers, elephants, hornbills, and so on. Even larger are the houses of the chiefs in some villages. One I measured was 123 yards long inside. Probably the owner himself did not know how many people lived in its many dark rooms. While in some villages the houses are scattered, in others they are so close together that self-defence would be impossible if one were trapped in one. The gates are well defended and guarded by the "Morungs," from which sloping ladders run to look-outs in trees, so that a man can keep watch from a look-out well beyond the gate and retreat to safety within the fence without coming to earth. The ground round the village is thickly studded with "panjis," which are practically invisible among the dead bamboo leaves. In some places branches are laid across the path to trip up any one running away. Of the warlike character of the Konyaks there can be no doubt. It was they who wiped out an outpost many years ago at Naginimara, where the Dikhu river emerges from the hills; it was they who once killed almost the whole of a survey party and took an English head, a feat which has only been equalled by Khonoma; and it was they who ambushed one of our columns some twelve years ago, stampeding the carriers and neatly removing some of their heads as they rushed them. In 1923, Dr. Hutton, Deputy Commissioner of the Naga Hills, and I were fortunate enough to be able to make a tour in the unadministered country to the east. To some of the villages we visited no white man had ever been before. Others had been visited by Colonel Woodthorpe, R.E., about 1875. His visits were vividly remembered, and we were even told, quite casually, in some places how many eggs and chickens had been given him. I only hope he got better eggs than we did. Twice the eggs given us for our breakfast

WEALTHY COUPLE AND HOUSE, KICHILIMI NAGA

MUNGCHEN VILLAGE, AO NAGA

in the morning were too quick for us ; they were put down too near the fire, and hatched the evening before !

We were able to go nearly as far as the main Patkoi range. No one has ever been to the top in this area and looked over the other side ; we, unfortunately, could not do so without exceeding our orders. This was especially disappointing, as we received some particularly tempting challenges. We were considered to be a most unpleasant colour, and doubt was expressed as to whether we should bleed if cut ; there was some feeling that the experiment ought to be made. From what we heard, however, it seems quite clear that the country between the top of the Patkoi and the Chindwin consists of low jungle-covered hills, apparently sparsely inhabited. One of our great difficulties was transport. Colonel Woodthorpe took his own carriers with him, but we, for various reasons, decided to pick ours up as we went. We had some trying hours persuading more than semi-hostile Konyaks to carry our loads. Sometimes they would march for an hour or two, and then suddenly put down their loads and refuse to go on, on the ground that the village they were approaching was hostile, and would ambush them on their way home, even if they did not attack as we advanced. For instance, between Yunghong and Angpang we had great trouble. The previous evening Yunghong, who did not in the least desire our presence, had tried to lead us through and right away from their village, intending that we should camp in the jungle and be unable to get carriers in the morning. We saw through the plan, however, and camped close to the village, while the inhabitants looked sullenly on. In the morning we got them to supply carriers with extreme difficulty, and set out. As soon as we reached the stream which divides their land from that of Angpang, their enemies from time immemorial, they put down their loads and collected in the high grass by the side of the path. They flatly refused to enter hostile territory, and things began to look awkward. Eventually we got them started again, only to be met halfway up the hill by a crowd of Angpang, who were very angry that we had brought Yunghong men on to their land. We therefore formed our escort into a cordon between the two angry crowds and sent Yunghong shouting home. Angpang picked up our loads and went up the hill singing of their valour and the cowardice of Yunghong and the rest of the world in general. In the morning they refused to supply carriers on the ground that they had carried the day before. Firmness and persuasion put an end to this objection, however, and once more we set out. Day after day of this sort of thing was wearing, but we got through at last, and had an excellent reception from the Northern Konyaks. From there we regained administered territory, and our troubles were at an end.

For all its malaria, mosquitoes, and leeches the country must be one of the most beautiful in the world. It is hard work, toiling up the hot steep slopes, but one is rewarded on the heights with unsurpassed views

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of green mountains, shading into blue, with a cloudless sky above, while away to the north one can often see the snowy ranges of the Himalayas. The people are primitive—long may they remain so—but they are exceedingly picturesque, cheerful, brave, and loyal. When the call came for men for the Naga Labour Corps for France, they came forward with wonderful readiness. Many who came were independent—just friends of the British Raj, ready to help, not subjects. All these men knew nothing of the sea, nothing of any land but their own. Yet they faced the unknown, and went. Some never came back to their green hills.

Before the paper the PRESIDENT (Dr. D. G. HOGARTH) said: To-night you are to have the pleasure of listening to Mr. Mills, of the Indian Civil Service, who has been governing one of the extreme corners of our Empire. He is to tell us about a range of mountains which, though included within the Empire, contains people over whom we, apparently, have little authority and about whom we have even less knowledge. Mr. Mills is singularly well qualified to speak to us about those people, because not only has he been an Administrative Officer, but he is keenly interested not merely in the geography of the country but also in the anthropology of the tribes, a rather rare combination; it is only fair, however, to remember that in recent years our Government in various parts of the world, not only upon the fringes of the Indian Empire but also in the Sudan and other places, has encouraged anthropological study. We need not say how laudatory that is and how very much the power of Administrative Officers to administer properly their districts is enhanced, if they set themselves to work, as Mr. Mills has done, from the first to gain a knowledge of the peculiar customs and the peculiar ideas of their peoples. It is certainly strange, and I think you will agree it is so when you have heard Mr. Mills, that there should be within such comparatively easy reach and between two such well-known and such thoroughly administered provinces as Assam and Burma, a range of mountains sheltering a number of tribes in the extremely primitive state, both technologically and psychologically, in which these tribes are. Without delaying further, I will ask Mr. Mills to read his paper upon the frontier between the provinces of Assam and Burma.

*Mr. Mills then read the paper printed above, and a discussion followed.*

Mr. F. KINGDON WARD: I know the Naga Hills only from the point of view of the visitor; but although I have met Mr. Mills to-night for the first time, I heard of him no less than eight years ago, when I spent a short holiday in those hills, and I came here to-night in the hope of hearing something of the botany of that country, because I have long looked longingly at the Patkoi range to which Mr. Mills referred. The lecturer spoke of the possibilities of a railway, and perhaps in years to come we may look forward to such a railway. He said the reason why it probably would not be made was because it would not pay. I do not think that economic questions of that sort enter into the question of frontier railways in India. It is almost entirely a strategic question. If there was any danger of invasion on the north-east frontier of India, at whatever cost, I think a railway would be built immediately. But, as we have seen from the photographs, it is a country in which there is no fear of invasion from beyond the border on a big scale, and we may wait very many years before any railway is built.

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There was one point to which the lecturer referred on which I am bound to say that I join issue with him. He suggested that as the forest is cleared away the rainfall naturally ceases. Personally I have always learned that where there is a heavy rainfall there is heavy jungle. Mr. Mills rather wants to put it the other way, and he says if the forest is removed the rainfall will cease. I should like to ask him on what ground he draws that conclusion. I have heard if forest is cleared away the rainfall is apt to become a little less, but I do not think that such an almost world-wide phenomenon as the Monsoon would cease because the jungle was removed! My own knowledge of the Naga Hills is confined to what one might call the absolute fringes of it, to Kohima, the administrative centre, where I spent a short holiday in trying to climb Japvo, a mountain about 10,000 feet high-- a very simple matter. It is only four days from Kohima, but in climbing up the steep jungle-clad side of the mountain one got some idea of the immense difficulties which officers on the frontier have to overcome.

I have been very much struck, if I may say so, by the youth of the lecturer, because when I heard of him eight years ago I always heard him referred to as a very seasoned officer who had done extraordinarily good work on the frontier, and one thought of him rather as a veteran. We owe these officers a great deal, when we consider the extraordinary difficulties which they have to overcome.

I happened to be in Kohima when the Naga coolies came home from France. I think they were about 1000 strong, and a great festival was held in Kohima, to which all the tribes sent their warriors to dance. I have no doubt that Mr. Mills, who was then at Mokokchung, sent in some of those contingents. It was a very fine display. We saw Angamis, Aos, Semas, Lhotas, and others doing their dances dressed in full war paint, and it was really an extraordinary thing, which gave one some insight into the work done by these frontier officers, that these people should be willing to come in and give such a magnificent display. I remember that several of the warriors who had come home from France joined in the dance wearing German helmets, which they had picked up on the field of battle.

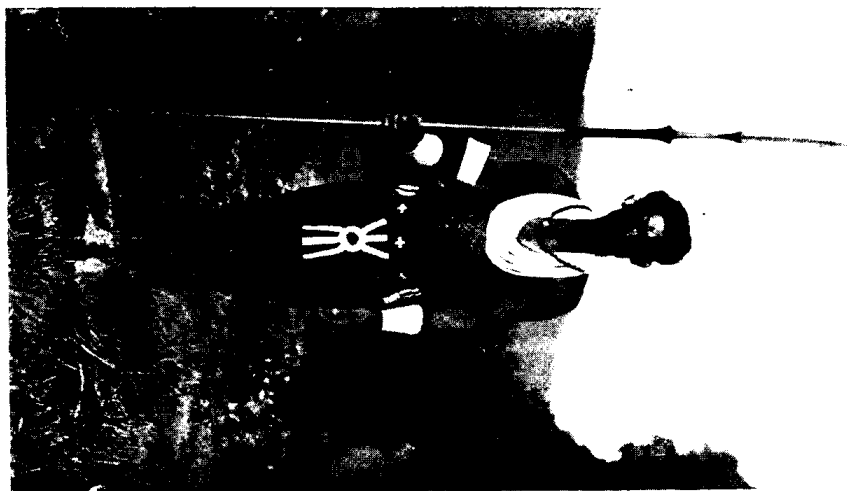
I am a little disappointed that Mr. Mills has not told us something about that mysterious mountain, Saramatti, which he mentioned once or twice, and which he saw. It is a goal on which many of us who are, like Mr. Mills himself, naturalists, have had our eyes for many years. I hope that on some future occasion Mr. Mills will reach the top of Saramatti and tell us something of its flora and fauna.

The PRESIDENT: Would any one else like to add anything, or to put any questions to Mr. Mills? If not, I should like to ask Mr. Mills if he could tell us in two or three words something about the racial families to which the people referred to belong. To me they seem singularly unlike what I expected to see, and I was very much intrigued about possible connections with the South Sea Islands. Will he say whether we have a Polynesian race in these hills, and, if so, how it came there?

Mr. J. P. MILLS: I had a good look at Saramatti. It is clothed with Khasia pine nearly up to the summit, which is shale. It has snow on until about the end of April. I have not been up it. No one ever has, so far as I know. There is a question whether it has any takin on it. I got a takin's head from an abandoned Kuki village during the rising, and I heard indirectly --I could not get hold of the owners, naturally--that it had been killed on Saramatti. I got a certain amount of confirmation, but no one I ever saw had



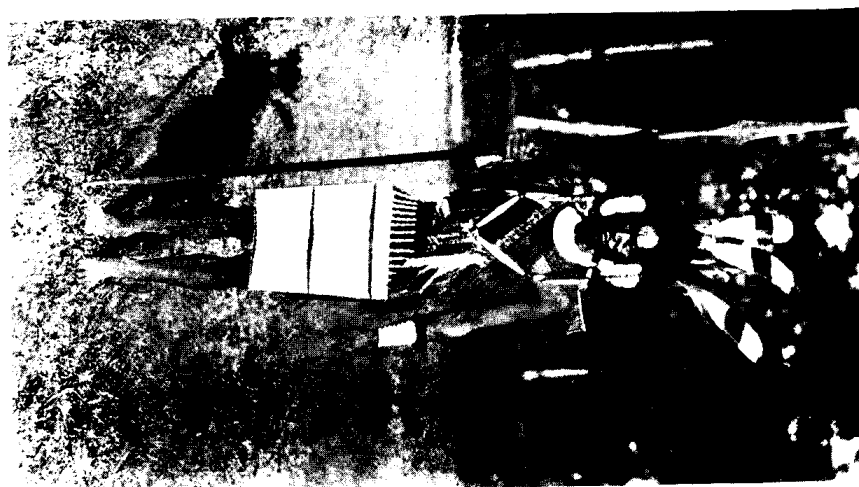
SAKHALU, CHIEF OF SAKHALUNAGAMI, SEMA  
NAGA



MEN OF WANGLA, KONYAK NAGA



MAN IN FULL DRESS, MOKONGTSU, AO  
NAGA



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MAN AND GIRL OF LONGCHANG VILLAGE. AO NAGA

DAUGHTER AND NIECE OF CHIEF OF  
BAIMHO. SEMA NAGAMAN AND WIFE. CHADUMI VILLAGE.  
E. ANGAMI NAGA

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## THE ALPS AND WEGENER'S THEORY

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himself killed a takin there. But I kept the head in case one ever got there again. The question formerly was whether there was sufficient area at over 10,000 feet to hold takin, but since that head was obtained takin have been found flourishing at 5000 feet in the Mishmi country.

As to the racial affinities of the Naga, that is a question which no one has ever settled with any satisfaction. They certainly have a Mongolian basis. They are chiefly Mongolian, with possibly a little Negrito blood in them, and they also certainly have affinities with some of the South Sea people. There are similarities of custom; even similarities of words. You can trace some words straight down from the Naga Hills as far as New Zealand. What seems to have happened is that a lot of people came through from the north somewhere and left an offshoot in the Naga Hills, and as they went along left more offshoots in Borneo—the people who made the terraces—and on right through the South Sea Islands. That is the theory which I am inclined to hold, but until we have far more evidence it is not a question we can settle with any certainty. I think I have answered all the points, and I thank you for listening so long.

The PRESIDENT: We have had a singularly interesting paper to-night which has touched on more different aspects of a country than usual. I think I need say no more, because your ready response to the half-sentence I have uttered has already shown how keenly you have all appreciated the interest of the paper. I have not the smallest doubt that you will give to Mr. Mills evidence of your keen appreciation and of your real gratitude to him for what he has told us to-night.

## THE ALPS AND WEGENER'S THEORY

Prof. Leon W. Collet, Hon. Corr. Member R.G.S., Dean of the Faculty of Science and Professor of Geology in the University of Geneva.

*Read at the Afternoon Meeting of the Society, 14 December 1925. Folding Plate following p. 304.*

FROM north to south the principal subdivisions of the Western Alps are as follows:

(1) *The Pre-Alps*, a very distinctive zone stretching from the Lake of Thun to Lake Geneva and the River Arve.

(2) *The High Calcareous Alps*,\* which with their greater height and accompanying glaciers are readily distinguished from (1). South of them rise the following crystalline Hercynian massifs (3) and (5).

\* The principal peaks which belong to the High Calcareous Alps are, from south-west to north-east, the Range of the Fis, the Mont Buet, the Peak of Tenneverdze, the Mont Ruan, the Tour Sallicre and the Dents du Midi, the Dents de Morcles, the Diablerets, the Wildhorn, the Wildstrubel, Balmhorn, Doldenhorn, Blumlisalp, Gspaltenhorn, Jungfrau, Mönch, Eiger, Wetterhorn, Titlis, Urirotstock, Pilatus, Todi, Glärnisch, Churfirsten, Säntis.

From a geological point of view, the High Calcareous Alps belong to the Helvetic Folds. These represent the sedimentary cover of the Foreland which has been folded owing to the travelling northwards of the pennine recumbent folds (see Figs. 11 and 13).

LLAGE.